AMENDMENTS TO THE CLAIMS

Please amend claims 38, 40-42, 45, 46, 51 and 54-56.

Please add claims 57-67.

This Listing of Claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

Claims 1-37 (canceled).

Claim 38 (currently amended): A recombinant DNA molecule comprising:

(a) the portion of a DNA sequence selected from the group consisting of the following subcloned fragments that hybridizes to at least one of the DNA inserts of Z-pBR322 (Pst)/HcIF-II-206 and Z-pBR322 (Pst)/HcIF-SN35-AHL6:

HchrIF-A, the subcloned HindIII fragment of chr 3 in E.coli HB101;

HchrIF-B, the subcloned EcoRI fragment of chr 12 in E.coli HB101;

HchrIF-C, the subcloned HindIII fragment of chr 12 in E.coli HB101;

HchrIF-D, the subcloned EcoRI fragment of chr 13 in E.coli HB101;

HchrIF-E, the subcloned EcoRI fragment of chr 23 in E.coli HB101;

HchrIF-F, the subcloned HindIII fragment of chr 23 in E.coli HB101;

HchrIF-G, the subcloned EcoRI fragment of chr 26 in E.coli HB101; and

HchrIF-H, the subcloned HindIII fragment of chr 26 in E.coli HB101, or

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by said hybridizing portion of any of the foregoing DNA inserts.

Claim 39 (canceled).

Claim 40 (currently amended): A recombinant DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) DNA sequences of the formula:

TTACTGGTGGCCCTCCTGGTGCTCAGCTGCAAGTCAAGCTGCTCTGTGGGCTGTGAT
CTGCCTCAAACCCACAGCCTGGGTAGCAGGAGGACCTTGATGCTCCTGGCACAGATG
AGGAGAATCTCTCTTTTCTCCTGCTTGAAGGACAGACATGACTTTGGATTTCCCCAG
GAGGAGTTTGGCAACCAGTTCCAAAAGGCTGAAACCATCCCTGTCCTCCATGAGATG
ATCCAGCAGATCTTCAATCTCTTCAGCACAAAGGACTCATCTGCTGCTTGGGATGAG
ACCCTCCTAGACAAATTCTACACTGAACTCTACCAGCAGCTGAATGACCTGGAAGCC
TGTGTGATACAGGGGGTGGGGGTGACAGAGACTCCCCTGATGAAGGAGGACTCCATT
CTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTCTATCTGAAAGAGAAGAAATAC
AGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCTTTTTCTTTGTCA
ACAAACTTGCAAGAAAGTTTAAGAAGTAAGGAA

and

TGTGATCTGCCTCAAACCCACAGCCTGGGTAGCAGGAGGACCTTGATGCTCCTGGCA
CAGATGAGGAGAATCTCTCTTTTCTCCTGCTTGAAGGACAGACATGACTTTGGATTT

CCCCAGGAGGAGTTTGGCAACCAGTTCCAAAAGGCTGAAACCATCCCTGTCCTCCAT

GAGATGATCCAGCAGATCTTCAATCTCTTCAGCACAAAGGACTCATCTGCTGCTTGG

GATGAGACCCTCCTAGACAAATTCTACACTGAACTCTACCAGCAGCTGAATGACCTG

GAAGCCTGTGTGATACAGGGGGTGGGGGTGACAGAGACTCCCCTGATGAAGGAGGAC

TCCATTCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTCTATCTGAAAGAGAAG

AAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCTTTTTCT

TTGTCAACAAACTTGCAAGAAAGTTTAAGAAGTAAGGAA, and

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by either of the foregoing DNA sequences.

Claim 41 (currently amended): A recombinant DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) DNA sequences of the formula:

ATGGCCCTGTCCTTTTCTTTACTGATGGCCGTGCTGGTGCTCAGCTACAAATCCATC

TGTTCTCTGGGCTGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTG

ATACTCCTGCAACAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACAT

GATTTCGGATTCCCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCC

ATCTCTGTCCTCCATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGAC

TCATCTGCTGCTTGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAG

CAACTGAATGACCTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCC

CTGATGAATGTGGACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTT

TATCTAACAGAGAAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATC

ATGAGATCCCTCTCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT

and

TGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTGATACTCCTGCAA
CAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACATGATTTCGGATTC
CCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCCATCTCTGTCCTC
CATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGACTCATCTGCTGCT
TGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAGCAACTGAATGAC
CTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCCCTGATGAATGTG
GACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTTTATCTAACAGAG
AAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCCCTC
TCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT, and

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by either of the foregoing DNA sequences.

Claim 42 (currently amended): The recombinant DNA molecule according to ~~any one of~~ claims 38~~, 40 and~~ or 41, wherein said DNA sequence is operatively linked to an expression control sequence.

Claim 43 (previously presented): The recombinant DNA molecule according to claim 42, wherein said expression control sequence controls the expression of genes of prokaryotic or eukaryotic cells and their viruses.

Claim 44 (previously presented): The recombinant DNA molecule according to claim 43, wherein said expression control sequence is selected from the group consisting of a

lac system, a β-lac system, a trp system, major operator and promoter regions of phage λ, and the control region of fd coat protein.

Claim 45 (previously presented): A recombinant DNA molecule selected from the group consisting of C8-IFN-α2, LAC-AUG(α2) and ß-lac-AUG(α2).

Claim 46 (currently amended): A host cell transformed with at least one recombinant DNA molecule according to any one of claims 38, [[and 40-]]41 and 45.

Claim 47 (previously presented): The host cell of claim 46 selected from the group consisting of bacteria, yeasts, mouse or other animal hosts, and human tissue cells.

Claim 48 (previously presented): A transformed host cell, wherein said host cell is E.coli HB101(Z-pBR322(Pst)/HcIF-II-206).

Claim 49 (previously presented): A transformed host cell selected from the group consisting of HchrIF-A, wherein HchrIF-A is the subcloned HindIII fragment of chr 3 in E.coli HB101; HchrIF-B, wherein HchrIF-B is the subcloned EcoRI fragment of chr 12 in E.coli HB101; HchrIF-C, wherein HchrIF-C is the subcloned HindIII fragment of chr 12 in E.coli HB101; HchrIF-D, wherein HchrIF-D is the subcloned EcoRI fragment of chr 13 in E.coli HB101; HchrIF-E, wherein HchrIF-E is the subcloned EcoRI fragment of chr 23 in E.coli HB101; HchrIF-F, wherein HchrIF-F is the subcloned HindIII fragment of chr 23 in E.coli HB101; HchrIF-G, wherein HchrIF-G is the subcloned EcoRI fragment of chr 26 in E.coli

HB101; and HchrIF-H, wherein HchrIF-H is the subcloned HindIII fragment of chr 26 in E.coli HB101.

Claim 50 (previously presented): A transformed host cell selected from the group consisting of E.coli DS410 (C8-IFN-α2), E.coli DS410 (LAC-AUG(α2)) and E.coli DS410 HB101 (ßlac-AUG(α2)).

Claim 51 (currently amended): A method for producing a recombinant DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) DNA sequences of the formula:

TTACTGGTGGCCCTCCTGGTGCTCAGCTGCAAGTCAAGCTGCTCTGTGGGCTGTGAT
CTGCCTCAAACCCACAGCCTGGGTAGCAGGAGGACCTTGATGCTCCTGGCACAGATG
AGGAGAATCTCTCTTTTCTCCTGCTTGAAGGACAGACATGACTTTGGATTTCCCCAG
GAGGAGTTTGGCAACCAGTTCCAAAAGGCTGAAACCATCCCTGTCCTCCATGAGATG
ATCCAGCAGATCTTCAATCTCTTCAGCACAAAGGACTCATCTGCTGCTTGGGATGAG
ACCCTCCTAGACAAATTCTACACTGAACTCTACCAGCAGCTGAATGACCTGGAAGCC
TGTGTGATACAGGGGGTGGGGGTGACAGAGACTCCCCTGATGAAGGAGGACTCCATT
CTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTCTATCTGAAAGAGAAGAAATAC
AGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCTTTTTCTTTGTCA
ACAAACTTGCAAGAAAGTTTAAGAAGTAAGGAA[[;]]

and

TGTGATCTGCCTCAAACCCACAGCCTGGGTAGCAGGAGGACCTTGATGCTCCTGGCA

CAGATGAGGAGAATCTCTCTTTTCTCCTGCTTGAAGGACAGACATGACTTTGGATTT

CCCCAGGAGGAGTTTGGCAACCAGTTCCAAAAGGCTGAAACCATCCCTGTCCTCCAT

GAGATGATCCAGCAGATCTTCAATCTCTTCAGCACAAAGGACTCATCTGCTGCTTGG

GATGAGACCCTCCTAGACAAATTCTACACTGAACTCTACCAGCAGCTGAATGACCTG

GAAGCCTGTGTGATACAGGGGGTGGGGGTGACAGAGACTCCCCTGATGAAGGAGGAC

TCCATTCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTCTATCTGAAAGAGAAG

AAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCTTTTTCT

TTGTCAACAAACTTGCAAGAAAGTTTAAGAAGTAAGGAA[[;]]

~~ATGGCCCTGTCCTTTTCTTTACTGATGGCCGTGCTGGTGCTCAGCTACAAATCCATC~~

~~TGTTCTCTGGGCTGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTG~~

~~ATACTCCTGCAACAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACAT~~

~~GATTTCGGATTCCCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCC~~

~~ATCTCTGTCCTCCATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGAC~~

~~TCATCTGCTGCTTGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAG~~

~~CAACTGAATGACCTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCC~~

~~CTGATGAATGTGGACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTT~~

~~TATCTAACAGAGAAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATC~~

~~ATGAGATCCCTCTCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT;~~

~~and~~

~~TGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTGATACTCCTGCAA~~

~~CAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACATGATTTCGGATTC~~

~~CCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCCATCTCTGTCCTC~~

~~CATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGACTCATCTGCTGCT~~

~~TGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAGCAACTGAATGAC~~

~~CTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCCCTGATGAATGTG~~

~~GACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTTTATCTAACAGAG~~

~~AAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCCCTC~~

~~TCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT~~, and

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by either of the foregoing DNA sequences,

comprising the step of culturing a host cell containing at least one recombinant DNA molecule of claim 40 ~~or 41~~ under conditions in which the host cell replicates the recombinant DNA molecule.

Claims 52-53 (canceled).

Claim 54 (currently amended): A DNA sequence coding for an α-[[type]]interferon selected from the group consisting of:

(a) DNA sequences of the formula:

TTACTGGTGGCCCTCCTGGTGCTCAGCTGCAAGTCAAGCTGCTCTGTGGGCTGTGAT

CTGCCTCAAACCCACAGCCTGGGTAGCAGGAGGACCTTGATGCTCCTGGCACAGATG

AGGAGAATCTCTCTTTTCTCCTGCTTGAAGGACAGACATGACTTTGGATTTCCCCAG

GAGGAGTTTGGCAACCAGTTCCAAAAGGCTGAAACCATCCCTGTCCTCCATGAGATG

ATCCAGCAGATCTTCAATCTCTTCAGCACAAAGGACTCATCTGCTGCTTGGGATGAG

ACCCTCCTAGACAAATTCTACACTGAACTCTACCAGCAGCTGAATGACCTGGAAGCC

TGTGTGATACAGGGGGTGGGGGTGACAGAGACTCCCCTGATGAAGGAGGACTCCATT

CTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTCTATCTGAAAGAGAAGAAATAC

AGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCTTTTTCTTTGTCA

ACAAACTTGCAAGAAAGTTTAAGAAGTAAGGAA

and

TGTGATCTGCCTCAAACCCACAGCCTGGGTAGCAGGAGGACCTTGATGCTCCTGGCA

CAGATGAGGAGAATCTCTCTTTTCTCCTGCTTGAAGGACAGACATGACTTTGGATTT

CCCCAGGAGGAGTTTGGCAACCAGTTCCAAAAGGCTGAAACCATCCCTGTCCTCCAT

GAGATGATCCAGCAGATCTTCAATCTCTTCAGCACAAAGGACTCATCTGCTGCTTGG

GATGAGACCCTCCTAGACAAATTCTACACTGAACTCTACCAGCAGCTGAATGACCTG

GAAGCCTGTGTGATACAGGGGGTGGGGGTGACAGAGACTCCCCTGATGAAGGAGGAC

TCCATTCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTCTATCTGAAAGAGAAG

AAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCTTTTTCT

TTGTCAACAAACTTGCAAGAAAGTTTAAGAAGTAAGGAA, and

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by either of the foregoing DNA sequences.

Claim 55 (currently amended): A DNA sequence coding for an α-[[type]]interferon selected from the group consisting of:

(a) DNA sequences of the formula:

ATGGCCCTGTCCTTTTCTTTACTGATGGCCGTGCTGGTGCTCAGCTACAAATCCATC

TGTTCTCTGGGCTGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTG

ATACTCCTGCAACAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACAT

GATTTCGGATTCCCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCC

ATCTCTGTCCTCCATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGAC

TCATCTGCTGCTTGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAG

CAACTGAATGACCTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCC

CTGATGAATGTGGACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTT

TATCTAACAGAGAAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATC

ATGAGATCCCTCTCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT

and

TGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTGATACTCCTGCAA

CAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACATGATTTCGGATTC

CCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCCATCTCTGTCCTC

CATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGACTCATCTGCTGCT

TGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAGCAACTGAATGAC

CTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCCCTGATGAATGTG

GACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTTTATCTAACAGAG

AAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCCCTC

TCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT, and

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by either of the foregoing DNA sequences.

Claim 56 (currently amended): A method for producing a DNA molecule comprising a DNA sequence encoding an α-[[type]]interferon comprising the step of culturing a host cell containing a DNA molecule comprising the DNA sequence of claim 54 ~~or 55~~ under conditions in which the host cell replicates the DNA molecule.

Claim 57 (new): The recombinant DNA molecule according to claim 40, wherein said DNA sequence is operatively linked to an expression control sequence.

Claim 58 (new): The recombinant DNA molecule according to claim 57, wherein said expression control sequence controls the expression of genes of prokaryotic or eukaryotic cells and their viruses.

Claim 59 (new): The recombinant DNA molecule according to claim 58, wherein said expression control sequence is selected from the group consisting of a lac system, a β-lac system, a trp system, major operator and promoter regions of phage λ, and the control region of fd coat protein.

Claim 60 (new): A host cell transformed with at least one recombinant DNA molecule according to any one of claims 40 and 57-59.

Claim 61 (new): The host cell of claim 60 selected from the group consisting of bacteria, yeasts, mouse or other animal hosts, and human tissue cells.

Claim 62 (new): A host cell transformed with at least one recombinant DNA molecule according to claim 42.

Claim 63 (new): The host cell of claim 62 wherein said expression control sequence controls the expression of genes of prokaryotic or eukaryotic cells and their viruses.

Claim 64 (new): The host cell of claim 63 wherein said expression control sequence is selected from the group consisting of a lac system, a β-lac system, a trp system, major operator and promoter regions of phage λ, and the control region of fd coat protein.

Claim 65 (new): The host cell of claim 62 selected from the group consisting of bacteria, yeasts, mouse or other animal hosts, and human tissue cells.

Claim 66 (new): A method for producing a recombinant DNA molecule comprising a DNA sequence selected from the group consisting of:

(a) DNA sequences of the formula:

ATGGCCCTGTCCTTTTCTTTACTGATGGCCGTGCTGGTGCTCAGCTACAAATCCATC
TGTTCTCTGGGCTGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTG
ATACTCCTGCAACAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACAT
GATTTCGGATTCCCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCC
ATCTCTGTCCTCCATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGAC
TCATCTGCTGCTTGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAG
CAACTGAATGACCTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCC

CTGATGAATGTGGACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTT

TATCTAACAGAGAAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATC

ATGAGATCCCTCTCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT

and

TGTGATCTGCCTCAGACCCACAGCCTGGGTAATAGGAGGACCTTGATACTCCTGCAA

CAAATGGGAAGAATCTCTCATTTCTCCTGCCTGAAGGACAGACATGATTTCGGATTC

CCCGAGGAGGAGTTTGATGGCCACCAGTTCCAGAAGACTCAAGCCATCTCTGTCCTC

CATGAGATGATCCAGCAGACCTTCAATCTCTTCAGCACAGAGGACTCATCTGCTGCT

TGGGAACAGAGCCTCCTAGAAAAATTTTCCACTGAACTTTACCAGCAACTGAATGAC

CTGGAAGCATGTGTGATACAGGAGGTTGGGGTGGAAGAGACTCCCCTGATGAATGTG

GACTCCATCCTGGCTGTGAGGAAATACTTCCAAAGAATCACTCTTTATCTAACAGAG

AAGAAATACAGCCCTTGTGCCTGGGAGGTTGTCAGAGCAGAAATCATGAGATCCCTC

TCGTTTTCAACAAACTTGCAAAAAAGATTAAGGAGGAAGGAT, and

(b) a DNA sequence that on expression codes for a polypeptide coded for on expression by either of the foregoing DNA sequences,

comprising the step of culturing a host cell containing at least one recombinant DNA molecule of claim 41 under conditions in which the host cell replicates the recombinant DNA molecule.

Claim 67 (new): A method for producing a DNA molecule comprising a DNA sequence encoding an α-interferon, comprising the step of culturing a host cell containing a

DNA molecule comprising the DNA sequence of claim 55 under conditions in which the host cell replicates the DNA molecule.